

Research of Ecological Motivation of the Heads and Specialists Getting an Education in the Field of Production and Application of Construction Materials

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Abstract. Production of construction materials causes serious damage to environment. On the other hand, this industry in big scales and with big effect uses waste of other industries that promotes improvement of an ecological situation. The advanced entities build the activities according to standards of the ISO 14000 and the Eco-Management and Audit Scheme (EMAS) series, implement the principles of ecological management. But process goes slowly. As objective obstacles the financial barrier (expenses), ignorance of effects to environment (unhealthy work conditions degree) and what operations need to be performed (to undertake) act. The main difficulty of the problem resolution of ecological production is the person, its values and motives, his consciousness and behavior. Results of research of ecological motivation of future specialists and heads of the entities on production and application of construction materials are given in article. The determining role of mentality and ecological consciousness at slow rates of implementation in production of eco-efficient technologies is proved.

1 Introduction

Objective threat of survival of mankind forces to build processes of interaction of society and the nature by the principles of mutual adaptation. Problems of ecological efficiency in production of construction materials take key places. Industry of building materials the largest consumer of natural resources. This industry annually gets and processes about 3 billion tons of raw materials: sand, clays, plaster, limestones, granites, basalts and other breeds. It causes serious damage to environment, pollutes the atmosphere and the Earth's surface. On pollution of the atmosphere dust the industry of construction materials wins first place among all industries. The second place is taken by motor transport; the third – thermal power [1].

On the other hand, this industry in big scales and with big effect uses waste of other industries (more than 300 million tons of various waste). For this reason consideration of environmental problems of the main productions and a possibility of their transition to a

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wasteless (net) way of development begins with production of construction materials [2]. Inclusion of the entities on production of construction materials in wasteless territorial and production complexes and what and industrial parks allows to remove problems of waste recycling of other industries, reduces harmful effects on environment. Also it leads to essential economic effects due to economy and a saving of raw materials, materials, energy resources; decrease in losses; decrease in ecological payments and penalties and so forth [3].

Versatile ecological activities of the entities which allow not only to reduce the corresponding costs and expenses but also to get additional profit are called ecological efficiency.

Already today the western investors begin to demand from the Russian entities of confirmation not only economic, but also ecological solvency. Standards of the ISO 14000 and Eco-Management and Audit Scheme (EMAS) series regulate a production process, including the core and auxiliary business. They characterize functioning of system of ecological management and activities of a management for improvement of system/

The advanced western companies already at the end of the XX century have begun to use actively the principles of the ekologo-economic theory, have changed strategy and tactics of the development and have achieved considerable success [4]. From two hundred new net technologies implemented in developed countries, more than 50% at the same time reduce the level of pollution of the environment and energy consumption, 44% — reduce consumption of raw materials, 68% — give a prize in operating costs, and 11% — in volume of capital investments [5].

In modern conditions transition to ecologically safe production of construction materials it is in many respects caused by consumer behavior.

Buyers are ready to pay much higher price for environmentally friendly products and the producer or the supplier offer more advantageous conditions of sale of ecological materials or provision of services [6]. On the stock exchanges share value of ecologically solvent entities increases.

Thus, the relations of construction industry with society are more and more firmly governed by ecological reputation of the producer whom to support becomes economically.

However in Russia not all entities hurry to subordinate the activities to requirements of standards of the ISO 14000 series. The main obstacles the financial barrier (expenses), ignorance of effects to environment (unhealthy work conditions degree) and what operations need to be performed (to undertake) [7]. But as the most obvious obstacle in a way of increase of ecological efficiency of the country, providing its ecological safety and decrease in load of environment the consumer behavior of managers - power engineering specialists and officials acts [8].

Practice has shown that environmental problems cannot be solved at once. It is necessary to know what factors determine consecutive and steady development of production what the emergence of new quality of management turning it into ecological management depends on.

The main difficulty of the problem resolution of ecological production is the person, its values and motives, his consciousness and behavior. Emergence of eco-friendly equipment and ecological technologies also depends on it.

Interest of the person, an assessment of importance of problems, understanding of their role in further development of production – it is the determining factor of production management of construction materials. Therefore, for more widespread introduction in Russia of eco-efficient production of construction materials it is necessary to use the controlling mechanism behavior of accounting entities, to develop at them motivation on emission restriction, to stimulate use of "net" technologies.

It is possible only in case of prevalence of spiritual and moral values over material (aggressive consumer) motivation, following to the principles of eco-justice which are shown in understanding by a management of the entity of moral responsibility for negative impact on environment and irrational use of natural resources [9].

There is a large number of the approaches, theories and concepts explaining ecologically motivated behavior [10, 11].

One researchers believe that growth of attention to environment is connected with expression of post-materialistic values and self-expression as a result of the increasing wealth in developed countries. Others place emphasis on religious values.

The third claim that the ecological behavior is altruism manifestation. It is regulated by personal moral standards of the individuals convinced that private actions can pose threat for others (so-called understanding of adverse effects) and that the acts they can prevent these consequences (so-called attributing of responsibility to itself).

Guschina E. G., Badrak N. Y, referring to the website of the company by Energy Education, provide the list of motives which push people to ecological behavior. It is demonstration of care of society; environment protection and saving of financial resources; demonstration of social responsibility to people for whom you care; accomplishment of the necessary and important work.

Therefore, mechanisms and resources of impact on heads of the entities on production of construction materials, for the purpose of implementation of ecological management, should be looked for in consciousness of people. Important characteristics of consciousness are both interests, and values, and motives of activities. Goal achievement depends on their quality and system. Motivation of activities shall rely on the funds allocated for the solution of environmental problems. Administrative or especially organizational controls as practice shows are ineffective.

Besides, in case of implementation in production of ecological management it is necessary to follow the principle of commitment.

The purpose of implementation of eco-efficient technologies shall include components which reflect environmental problems and lash them in system of common problems of development of production.

The principle of professionalism is of also great importance. It consists in need of special training of managers, heads of the entities on production of the construction materials capable to operate with knowledge in the field of ecology.

Professional training gives the operating installations of management and allocation of priorities. The Russian heads lack it today catastrophically.

2 Tasks, methods and results of research

Studying of the motivational and valuable sphere of future heads of the entities of a construction industry, identification in it ecological orientations and comparison to the purchased McClelland's needs became a task of this research.

Research has been conducted in Moscow State University of Civil Engineering in 2015-2016. The group of respondents consisted of 112 students who are trained according to the "Production and Use of Construction Materials" program (Experts group) and 97 students who are trained according to the "Production Management" program (Leaders group). Research included three procedures: sociological poll, a technique "Valuable orientations" of Rokich and a technique of research of the acquired McClelland's needs.

Sociological poll included 17 statements about ecological aspects of activity of the person. Respondents had to express the attitude towards them. Results of research regarding the questions concerning future professional activity of respondents are given in table 1.

Table 1. Results of sociological poll.

Question	Replies of Experts group, %			Replies of Leaders group, %		
	No	Perhaps	Yes	No	Perhaps	Yes
People exaggerate value of negative impact of technical progress on the nature	89	4	7	85	6	9
Environment protection is so important that no restrictions for emission of pollution can be considered as too rigid	2	9	89	4	16	80
The environmental disasters happening on the planet concern me personally	57	33	10	62	26	12
It is necessary to improve habitat, without being considered with any expenses	5	31	64	23	32	45
"The person – the owner of the nature"	55	7	38	53	9	38
My future profession is connected with the relations "the Person – the Nature"	55	25	20	92	7	1

The given results show that in general nature of replies of two groups of respondents is similar. The greatest distinction is observed only in the answer to the last question. Students from Experts group are inclined to connect more the future professional activity with natural factors, than Leaders group. It partly confirms the statement pushed earlier about shortcomings of system of ecological attitude of heads of the entities on production of the construction materials which are a barrier to implementation of eco-efficient technologies. Other question reflecting distinction in system of the ecological-economic relations concerns expenses on improvement of habitat. As we see, the Leaders group gives less affirmative answers that testifies to its bigger economic orientation, than at Experts group.

Studying of valuable orientations of students was performed by means of Rokich's technique. The system valuable orientations substantially defines an orientation of the personality and constitutes a basis of its relations to world around, to other people, to itself, a basis of outlook and a kernel of motivation of activity, a basis of the vital concept and "life philosophies". Rokich allocates two groups of values: terminal – beliefs that the ultimate goal of individual existence is worth it that to aim at it; tool – beliefs that some conduct or property of the personality is preferable in any situation. This division corresponds to traditional division into values purposes and values means.

In this research only terminal values (values purposes) were considered. For the analysis they have been distributed on three equal groups: priority (1), significant (2), insignificant (3). In table 2 in percentage expression the frequency of hit of each value is provided to the specified groups.

Table 2. Rokich test results.

Terminal values	Experts group, %			Leaders group, %		
	1	2	3	1	2	3
active life (completeness and emotional saturation of life);	25	54	21	67	30	3
vital wisdom (the maturity of judgments and common sense reached by life experience);	3	17	80	5	43	52
health (physical and mental);	13	26	61	19	50	31
interesting work;	56	42	2	60	33	7
beauty of the nature and art (experience fine in the nature and in art);	0	4	96	1	9	90
love (spiritual and physical proximity with	48	48	4	42	50	8

darling);						
financially secure life (absence of material difficulties);	92	8	0	95	4	1
presence of good and loyal friends;	7	80	13	19	60	21
public calling (respect of people around, collective, fellow workers);	51	46	3	78	20	2
knowledge (possibility of expansion of the education, outlook, general culture, intellectual development);	40	33	27	39	30	31
productive life (most complete use of the opportunities, forces and capabilities);	47	40	13	51	40	9
development (work on, continuous physical and spiritual improvement);	28	20	52	39	30	31
entertainments (pleasant, easy pastime, lack of duties);	9	40	51	12	30	58
freedom (independence, independence in judgments and acts);	86	11	3	88	9	3
happy family life;	40	51	9	44	48	8
happiness of others (welfare, development and improvement of other people, all people, mankind in general);	1	13	86	4	22	74
creativity (possibility of creative activity);	10	18	72	15	18	67
self-confidence (internal harmony, freedom from internal contradictions, doubts).	75	24	1	78	10	12

From the table it is visible that in both groups have entered category of priority values: financially secure life, interesting work, public recognition, freedom, self-confidence. Difference consists only in one value: love and active life ("Experts" and "Heads" respectively). Distinctions and in the values concerning ecological consciousness, beauty of the nature and happiness of others are not revealed. Both of them have got to the third category – insignificant. This circumstance, adjusted for early age of respondents, can serve as an explanation of the difficulties arising in case of implementation of ecological management in activities of the Russian entities for production of construction materials.

Any significant communications between results of sociological poll and Rokich's technique it hasn't been established.

In the third part of research the technique of an assessment of the purchased requirements based on McClelland's theory has been used. It considers three types of requirements: power, achievement (success) and partnership (affiliation). McClelland has established that the motive of success allows the person (and even to the whole society) to achieve high economic results quicker. For success of the manager the developed requirement of dominion has the greatest value. The requirement of partnership is significant, generally for non-management employees of the entity.

McClelland has revealed, and S. E. Kock has experimentally proved that the greatest efficiency at the highest organizational levels is shown by heads at whom the high motive of the power (V) is combined with high motive of achievement (D) and low motive of affiliation (And). Such combination of motives (In + D-and) most promotes economic development of firm [12]. Research of features of motivation of future specialists and heads of the entities of construction materials I have shown availability of rank correlation of Spirmen between prevalence of motive of affiliation and an affirmative answer on the questions "Environment Protection Is So Important that No Restrictions for Emission of Pollution Can Be Considered as Too Tough" (0,71), "It is necessary to improve habitat, without being considered with any expenses" (0,73).

Thus, this research allows to assume that for the modern director on production of construction materials aimed at implementation and use in work of the principles of ecological management, the formula of an optimum combination of motives shall look as follows: In + D+ And. Such system of motives will provide systematic movement to the planned what efficiency increase purpose (motive of achievement), will allow to organize collective and to implement system of ecological management (motive of the power) in work. And the motive of affiliation inducing the head to correlate the decisions and actions to opinion and interests of society will act as the starting and supporting mechanism.

3 Conclusions

The conducted research of ecological motivation of future specialists and heads of the entities on production of construction materials has revealed low level ecological constituting in mentality of the Russian students. It finds further expression in slow rates of implementation in production of eco-efficient technologies, ecological management and standards of the ISO 14000 series.

Change of the existing behavior is possible through provision to people of thematic information and the appeal to personal values. The higher school shall provide development of the moral criteria of behavior limiting boundless material requirements [13, 14], putting in the forefront care about health and ecological safety of the nation and all mankind.

The central place in this process is taken by a factor of ecological education. It is backbone and can be considered in two foreshortenings – general ecological education and ecological education of the modern manager, his professional training in this area. The bigger number of class periods given to environmental problems in the Production and Use of Construction Materials program in comparison with the Production Management program is shown in more responsible attitude of students to environmental problems of a construction industry and in understanding of communication of results of the professional activity with environment [15].

Implementation of ecologically effective technologies and ecological management in the industry assumes obligatory involvement in conscious purposeful versatile ecological activities not only certain specialists, but also heads, the persons making decisions, factory personnel in general, and also interested in ecological activities of the entity of all other parties. The solution of a similar task is possible on the basis of essentially other motivation of activities which is possible for creating within general and professional education [16].

In the Russian state educational standards there are already several specialties of an ecological profile. The need for specialists in the field of ecological management already exists. Only specialists with complex ecological and managerial education will be able to satisfy it. Yet there are no such specialists in Russia as there is no excessive demand for them and. So far it is only a piece good. But it is necessary to train such specialists. Education shall be oriented not only to momentary requests of an industry, but also be able to expect future requirements which satisfaction will require specialists with new qualities. Training of such specialist takes any year.

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